

**REMARKS**

Claims 1-9, 12, 14-36, 38-53, 56, 58-80, 82-89, 91, 92, 94, 95, 97, 98, 100-108, 111-113, 115-133 and 136-162 are pending. Claims 1, 12, 14, 26, 28, 33, 45, 46, 56, 58, 74, 78-81, 89, 92, 95-98, 100-102, 104, 105, 115, 118-123 and 126 have been amended. Claims 10, 11, 13, 37, 54, 55, 57, 81, 90, 93, 96, 99, 109, 110, 114, 134 and 135 have been cancelled.

Rejections under 35 U.S.C. § 102(b) based on Vogley:

Claims 1-5 stand rejected under 35 U.S.C. § 102(b) as being anticipated by EP 0849685 to Vogley. Applicants respectfully request reconsideration of this rejection.

Claim 1 recites a "memory system" including "a memory controller" and at least one "memory storage device." The memory system includes "an optical path coupling said memory controller with said at least one memory storage device" and "a wavelength-adjustable electro-optical converter." The optical path is "arranged and configured for exchanging data between said controller and said at least one memory storage device."

Vogley discloses a memory system in which a controller operates to broadcast information to the memory modules over optical fibers. The memory modules transmit data to the controller over a communications bus. Vogley does not teach or suggest that the optical path is "arranged and configured for exchanging data between said controller and said at least one memory storage device." Vogley also fails to disclose "a wavelength-adjustable electro-optical converter." Claim 1 and its dependent claims, are patentable over the cited reference to Vogley.

Rejections under 35 U.S.C. § 103(a) based on Vogley in view of Acton:

Claims 6-8, 10, 12-14, 24-41, 44-51, 53, 55-58, 68-71, 73-85, 88, 89, 92, 95, 97, 98, 101-107, 109, 114, 115, 118-123, 126-132, 134, 139-148 and 150 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Vogley in view of U.S. Pat. No. 5,544,319 to Acton et al. Applicants respectfully request reconsideration of this rejection.

Claims 6-8, 10, 12-14, 24-41 and 44 depend from claim 1. The deficiencies of Vogley with respect to claim 1 have been discussed above.

Acton et al. discloses an optical link between two memory coupling system controllers. A memory bus connects each controller to its respective memory devices. Acton et al. does not disclose or suggest a memory system that includes "an optical path coupling said memory controller with said at least one memory storage device," the optical path being "arranged and configured for exchanging data between said controller and said at least one memory storage device." Acton also fails to disclose "a wavelength-adjustable electro-optical converter." Therefore, neither Vogley nor Acton disclose these limitations. Accordingly, the rejection of claims 6-8, 10, 12-14, 24-41 and 44 should be withdrawn.

Claim 45 recites a computer system including, *inter alia*, a memory system connected to a processor. The memory system includes "a memory controller" and "at least one memory storage device." The memory system also includes an "optical path coupling said memory controller with said at least one memory storage device for optically exchanging data between said controller and said at least one memory storage device" and "a wavelength-adjustable electro-optical converter."

Neither Vogley nor Acton discloses or suggests a memory system that includes an "optical path coupling said memory controller with said at least one memory storage device for optically exchanging data between said controller and said

at least one memory storage device.” Vogley and Acton also fails to disclose “a wavelength-adjustable electro-optical converter.” Claim 45 and its dependent claims are patentable over Vogley and Acton et al., alone or in combination.

Claim 89 recites an electro-optical converter for a memory system that includes “at least one input for receiving an electrical data signal from a memory controller,” and “at least one wavelength-adjustable device arranged and configured to convert said data signal to an optical signal.” At least one optical output is “arranged and configured to transmit said optical signal into an optical path coupled to a memory storage device.”

Neither Vogley nor Acton et al. teach or suggest a converter for a memory system that has one optical output “arranged and configured to transmit said optical signal into an optical path coupled to a memory storage device.” Vogley and Action also fail to disclose a “wavelength-adjustable device arranged and configured to convert said data signal to an optical signal.” Claim 89 and its dependent claims are patentable over Vogley and Acton et al., alone or in combination.

Claim 92 recites an electro-optical converter for a memory system that includes “at least one input arranged and configured to receive an electrical data signal from at least one memory storage device,” and “at least one wavelength-adjustable device arranged and configured to convert said data signal to an optical signal.” The memory system also includes “at least one optical output arranged and configured to transmit said optical signal into an optical path.”

Neither Vogley nor Acton et al. teach or suggest “at least one input arranged and configured to receive an electrical data signal from at least one memory storage device,” “at least one wavelength-adjustable device arranged and configured to convert

said data signal to an optical signal,” and also “at least one optical output arranged and configured to transmit said optical signal into an optical path.” Claim 92 and its dependent claims are patentable over Vogley and Acton et al., alone or in combination.

Claim 95 recites an electro-optical converter for a memory system comprising “at least one input arranged and configured to receive an optical data signal from an optical path coupled to a memory storage device.” At least “one wavelength-adjustable electro-optical converter is arranged and configured to convert said received data signal to an electrical signal.” At least “one electrical output is arranged and configured to transmit said output signal to an electrical path of a memory controller.”

Neither Vogley nor Acton et al. teaches or suggests a converter for a memory system that has “at least one input arranged and configured to receive an optical data signal from an optical path coupled to a memory storage device” or a “wavelength-adjustable electro-optical converter is arranged and configured to convert said received data signal to an electrical signal.” Claim 95 and its dependent claims are patentable over Vogley and Acton et al., alone or in combination.

Claim 98 recites an electro-optical converter for a memory system comprising “at least one input arranged and configured to receive an optical data signal from an optical path,” and “at least one wavelength-adjustable electro-optical converter arranged and configured to convert said received optical data signal received by said at least one input to an electrical signal.” The memory system also includes at least “one electrical output arranged and configured for transmitting said output electrical signal to an electrical path of a memory storage device.”

Neither Vogley nor Acton et al. teaches or suggests a converter for a memory system that features at least “one electrical output arranged and configured for

transmitting said output electrical signal to an electrical path of a memory storage device" and a "wavelength-adjustable electro-optical converter." Claim 98 and its dependent claims are patentable over Vogley and Acton et al., alone or in combination.

Claim 101 recites a method of operating a memory system comprising "receiving an electrical signal output from a memory controller" and "converting said electrical signal output from said controller to an optical signal for transmission on said optical path, said conversion step further comprising adjusting the wavelength of said optical path." The method also includes "transmitting said optical signal over an optical path to a memory storage device."

Neither Vogley nor Acton et al. teaches or suggests "transmitting said optical signal over an optical path to a memory storage device" or "adjusting the wavelength of said optical path" as recited in claim 101. Claim 101 and its dependent claims are patentable over Vogley and Acton et al., alone or in combination.

Claim 126 recites a method of operating a memory system comprising "receiving an electrical signal output from at least one memory storage device; converting said electrical signal output from said memory storage device to an optical signal for transmission on said optical path, said conversion step further comprising adjusting the wavelength of said optical path" and "transmitting said optical signal over an optical path to a memory controller controlling said at least one memory storage device."

Neither Vogley nor Acton et al. teaches or suggests a memory system operated by "receiving an electrical signal output from at least one memory storage device," "converting said received electrical signals into an optical signal," "transmitting said optical signal over an optical path to a memory controller controlling

said at least one memory storage device," or "adjusting the wavelength of said optical path." Claim 126 and its dependent claims are patentable over Vogley and Acton et al., alone or in combination.

Rejections under 35 U.S.C. § 103(a) based on Vogley in view of Acton et al. and further in view of Fee:

Claims 9, 15-23, 42, 43, 52, 59-67, 86, 87, 108, 111-113, 124, 125, 133, 136-138, 149, 152-154, 156-158, and 160-162 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Vogley in view of Acton et al. and further in view of U.S. Pat. No. 6,658,210 to Fee. Applicants respectfully request reconsideration of this rejection.

Claims 9, 15-23, 42, 43, and 151-154 depend from 1. Claim 1 is patentable over Vogley in view of Acton et al. Fee has not been cited against claim 1. If Fee were properly cited against claim 1, the combination would not produce the invention recited by claim 1. Claim 1 and its dependent claims are patentable over the combination of cited references to Vogley, Acton et al. and Fee.

Claims 52, 59-67, 86, 87, and 156-158 depend from claim 45. Claim 45 is patentable over Acton et al. Fee has not been cited against claim 45, and in any event would not combine with Vogley in view of Acton et al. to establish *prima facie* obviousness. Claim 45 and its dependent claims are patentable over the combination of cited references to Vogley, Acton et al. and Fee.

Claims 108, 111-113, 124, 125, and 160-162 depend from claim 101. Claim 101 is patentable over Vogley in view of Acton et al. Fee has not been cited against claim 101. Even if Fee had been properly cited against claim 101, the proposed combination with Acton et al. would not establish *prima facie* obviousness. Claim 101 and its

dependent claims are patentable over the proposed combination of Vogley, Acton et al. and Fee.

Claims 133, 136-138, and 149 depend from claim 126. Claim 126 is patentable over Vogley in view of Acton et al. Fee has not been cited against claim 126, and even if properly cited would not combine with Acton et al. to render claim 126 *prima facie* obvious. Claim 126 and its dependent claims 127-150 are patentable over the proposed combination of Vogley, Acton et al. and Fee.

Rejections under 35 U.S.C. § 103(a) based on Vogley in view of Acton et al. and further in view of Copeland:

Claims 11, 54, 72, 90, 91, 93, 94, 96, 99, 100, 110, 116, 117, 135, 142, 151, 155, and 159 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Vogley in view of Acton and further in view of U.S. Pat. No. 6,782,209 to Copeland. Applicants respectfully request reconsideration of this rejection.

Claims 11 and 151 depend from claim 1. Claim 1 is patentable over Vogley in view of Acton et al. Copeland has not been cited as a reference against claim 1. Even if Copeland had been properly cited against claim 1, the proposed combination would not render claim 1 *prima facie* obvious. Claim 1 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.

Claims 54, 72, and 155 depend from claim 45. Claim 45 is patentable over Vogley in view of Acton et al. Copeland has not been cited as a reference against claim 45, and even if properly cited would not render claim 45 *prima facie* obvious. Claim 45 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.



Claims 90 and 91 depend from claim 89. Claim 89 is patentable over Acton et al. Copeland has not been cited as a reference against claim 89, and had it been would not render claim 89 obvious. Claim 89 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.

Claims 93 and 94 depend from claim 92. Claim 92 is patentable over Vogley in view of Acton et al. Copeland has not been cited as a reference against claim 92. Claim 92 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.

Claim 96 depends from claim 95. Claim 95 is patentable over Acton et al. Copeland has not been cited as a reference against claim 95, and even if properly cited would not render claim 45 *prima facie* obvious. Claim 95 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.

Claims 99 and 100 depend from claim 98. Claim 98 is patentable over Vogley in view of Acton et al. Copeland has not been cited as a reference against claim 98. Even if Copeland had been properly cited against claim 98, *prima facie* obviousness would not have been established. Claim 98 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.

Claims 110, 116, 117, and 159 depend from claim 101. Claim 101 is patentable over Vogley in view of Acton et al. Copeland has not been cited against claim 101, and in any event would not serve to render claim 101 *prima facie* obvious. Claim 101 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.



Amendment dated

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Claims 135 and 142 depend from claim 126. Claim 126 is patentable over Vogley in view of Acton et al. Copeland has not been cited against claim 126, and would not render obvious claim 126 in any event. Claim 126 and its dependent claims are patentable over the proposed combination of references to Vogley, Acton et al. and Copeland.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Dated:

Respectfully submitted,

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